

Social Network Sensors for Cancer

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Abstract

Massive amounts of health-related information is derived from traditional methods including clinical studies. More recently social media has emerged as a complementary source of data, offering valuable insight especially with respect to general trends. Social networks have also been used for the dissemination of health related information and for awareness campaigns.

Most previous research studies that use social media are instantaneous studies. That is the studies are based on a snapshot of the data over a given time period. This data is analyzed and the findings are presented in terms of rules, properties or trends. This methodology implies that most of the historical data is lost with the evolution of the social data and a continuum in the analysis of this data is lacking.

In this paper, we show that the knowledge extracted from social media data can evolve and that much is to be learned from this evolution over extended time periods. The challenge in extended social network studies is the high volume and high velocity of underlying data. Collecting this information over an extended time period is impractical. Therefore, we propose a methodology that will sense the data and aggregate it over time into useful knowledge for a given subject. We demonstrate the application of this method to cancer data for the Twitter social network. Our preliminary results show that, for instance, cancer patients with critical conditions tend to be more active than newly diagnosed patients. We anticipate that these longtime trends and observations which are derived from social network sensors can improve research and support practical decision making.